Biodiversity Informatics: An interactive computer-aided identification and knowledge base on tree species of Lao PDR

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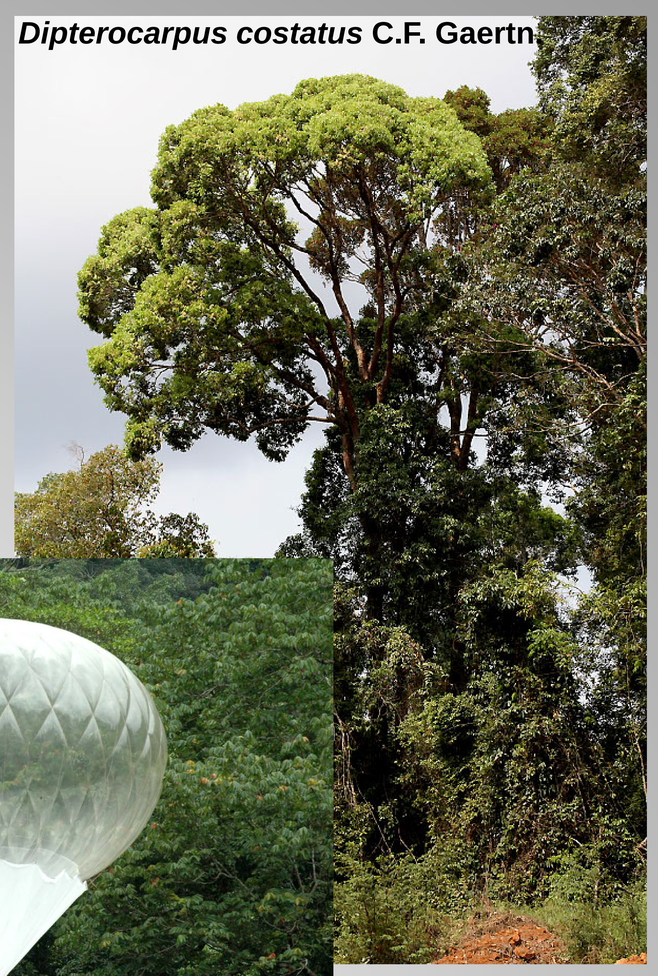
Objectives

• To enrich the existing knowledge base (BIOTIK project*) on a major "hot spot" of biodiversity: the rain forests of Annamite Mountain range of Lao PDR, in the framework of the Inventory of biodiversity of forest canopies conducted in 2012 in Lao PDR under F. Hallé scientific direction, and also to participate to broader initiatives such as PI@ntNet project**.

• To translate the identification tool in the Lao language in order to contribute to the capacity-building in plant taxonomy in the country.

• To transfer the identification system to touch pads, enabling plant identification and entering data directly in the field.


***Dipterocarpus costatus* C.F. Gaertn.**


Canopy Bubble

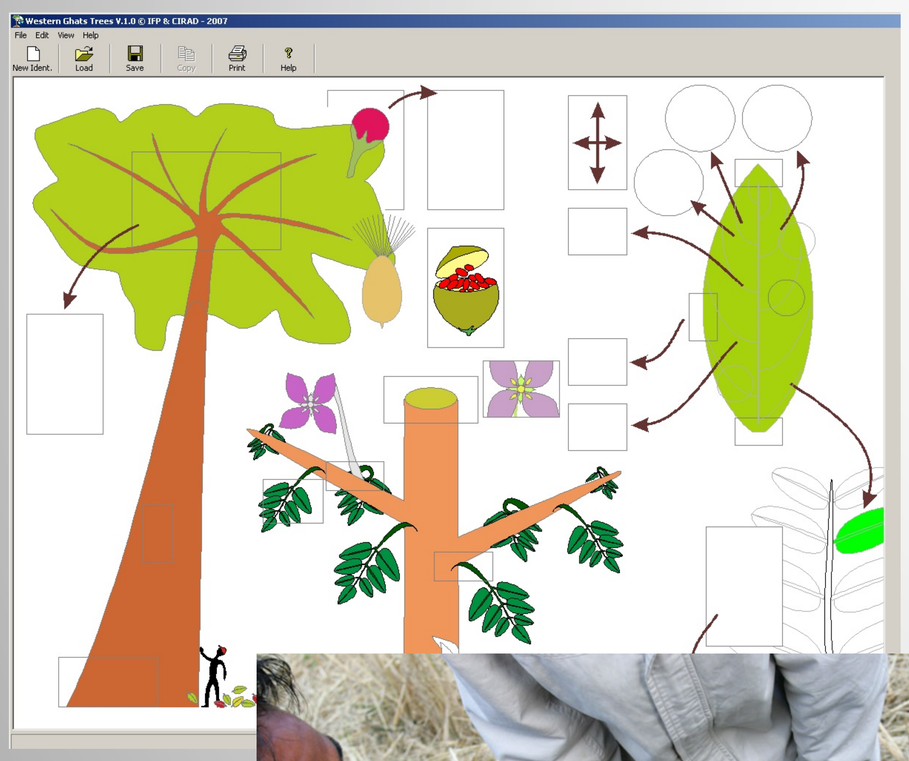
Materials & Methods

• Expedition: « Inventory of biodiversity of forest canopies in Laos 2012 – 2015 » at Phou Hin Poun National Park, Khammouane province, Lao PDR.

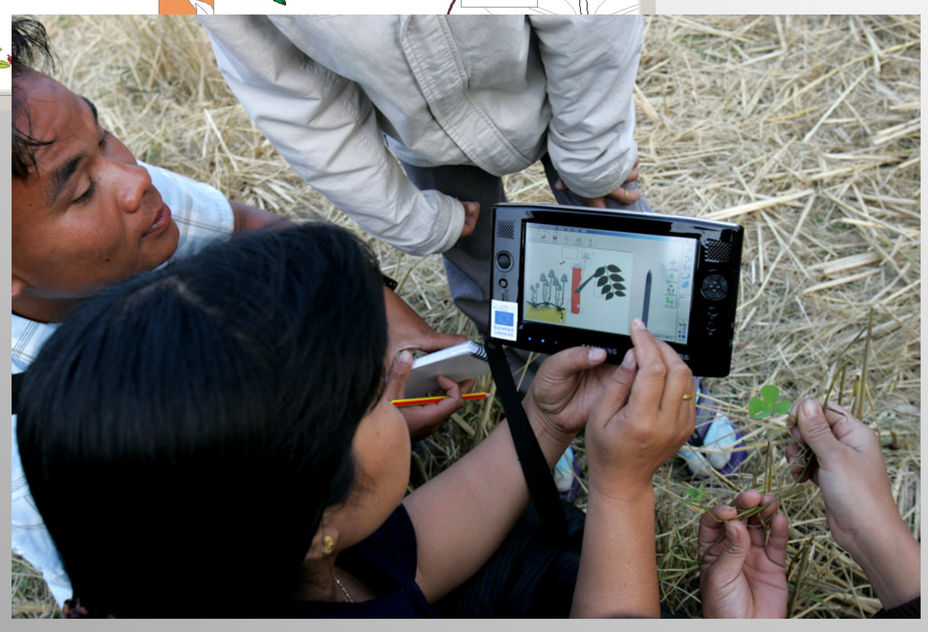
• 12 days of field work accessing to the forest canopy using the Canopy Bubble inflated with helium (Radeau de Cimes - F. Hallé, G. Ebersolt & D. Cleyet-Marrel, 2012).

• An existing multimedia species identification software IDAO*** technology is used (IDentification Assistée par Ordinateur, Grard P. 2002).

• Sampling trees (DBH>10cm) by transect adjusted according to habitats: agricultural landscapes, secondary *Lagerstroemia*, Datiscaceae and Bamboo forests, and Dipterocarpaceae primary forests.



Graphical interface of tree species identification software



Tree species identification software running on a mobile device

Preliminary results

• 98 forest trees species collected belonging to 39 families. Most represented: Euphorbiaceae (12%), Moraceae (8%), Myrtaceae (6%) and Rubiaceae (6%) (see Table).

• Species identification work in progress at MNHN Paris. So far, 58 species identified, of which :

• nearly 21% are new records for the country (not listed in the last check list by Newman *et al.* 2007),

• 2 species are expected to be new species :

- a Simaroubaceae tree from dense lowland forest,
- a Moraceae tree from Dipterocarpaceae primary forest at the bottom of the karsts.

Family	n° species
Achariaceae	1
Anacardiaceae	2
Annonaceae	4
Bignoniaceae	1
Cannabaceae	1
cf. Celastraceae	1
Clusiaceae	3
Combretaceae	1
Daphniphyllaceae	1
Dichapetalaceae	1
Dipterocarpaceae	4
Ebenaceae	3
Elaeocarpaceae	1
Euphorbiaceae	12
Fabaceae	4
Fagaceae	3
Icacinaceae	1
Lamiaceae	2
Lauraceae	1
Lecythidaceae	2
Lythraceae	4
Malvaceae	2
Melastomataceae	2
Meliaceae	3
Moraceae	8
Myristicaceae	2
Myrtaceae	6
Ochnaceae	1
Oleaceae	1
Putranjivaceae	2
Rhamnaceae	1
Rubiaceae	6
Rutaceae	2
Sapindaceae	4
Simaroubaceae	1
Staphyleaceae	1
Sterculiaceae	1
Urticaceae	1
Verbenaceae	1
39 families	**98 species**

Last remarks

• These preliminary results illustrate the **limited knowledge of the flora** of the surveyed region and of the country's flora in general.

It is noteworthy that such a small sample can contain so many species never mentioned for the country.

•While the discovery of new herbaceous species is relatively common, the discovery of **new tree species** is much rarer.

• Once again, this emphasizes the needs for more plant collecting and identification work in this region and to improve training and capacity building in plant taxonomy.

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Partners

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*** http://idao.cirad.fr/